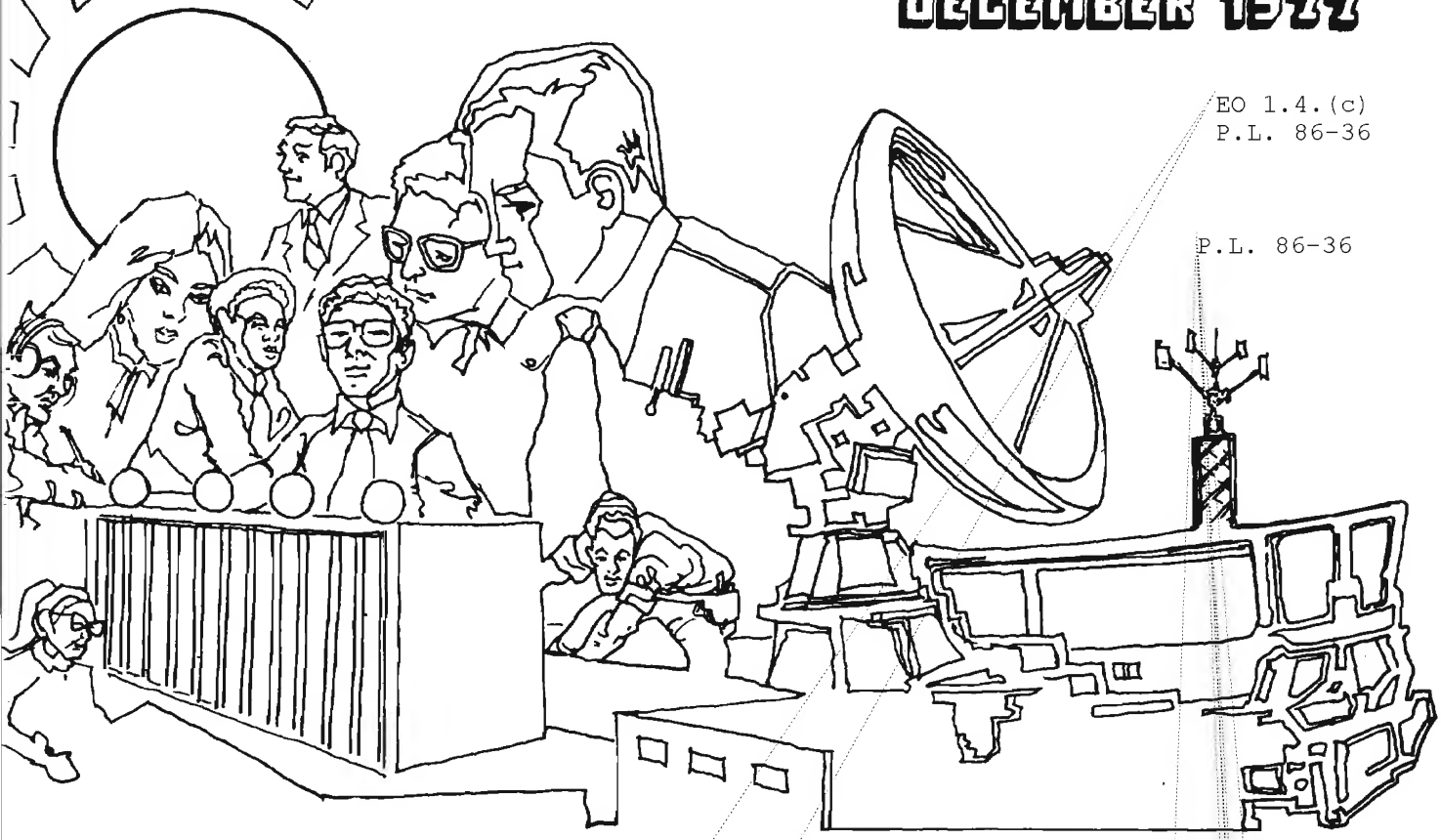
DOCID: 4009805

~~TOP SECRET~~

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

CRYPTOLOG

DECEMBER 1977



EO 1.4.(c)
P.L. 86-36

P.L. 86-36

[redacted].....[redacted].....1
CONVERSATION WITH A MICROGRAPHICS PIONEER...Don Wigglesworth.....4
WHAT MADE THEM DO IT?.....[redacted].....5
C.A.A. MESSAGE AND NEWS.....[redacted].....9
[redacted].....[redacted].....10
WHAT IS PATTERN RECOGNITION?.....[redacted].....15
LETTER TO THE EDITOR.....[redacted].....16
1977 CRYPTOLOG INDEX.....17

~~THIS DOCUMENT CONTAINS CODEWORD MATERIAL~~

~~TOP SECRET~~

~~Classified by DIRNSA/CHCSS (NSA/CSSM 123-2)~~
~~Exempt from GDS, EO 11652, Category 2~~
~~Declassify Upon Notification by the Originator~~

Declassified and Approved for Release by NSA on 10-12-2012 pursuant to E.O. 13526,MDR Case # 54778

DOCID: 4009805

~~TOP SECRET~~

CRYPTOLOG

Published Monthly by P1, Techniques and Standards,

for the Personnel of Operations

VOL. IV, NO. 12 DECEMBER 1977

PUBLISHER WILLIAM LUTWINIAK

BOARD OF EDITORS

Editor in Chief.....Arthur J. Salemme (5236s)

Collection.....[redacted] (8955s)

Cryptanalysis.....[redacted] (4902s)

Language.....[redacted] (5236s)

Machine Support.....[redacted] (5303s)

Mathematics.....Reed Dawson (3957s)

Special Research.....Vera Filby (7119s)

Traffic Analysis.....[redacted] (4477s)

Production Manager.....Harry Goff (4998s)

P.L. 86-36

For individual subscriptions
send
name and organizational designator
to: CRYPTOLOG, P1

~~TOP SECRET~~

EO 1.4.(c)
P.L. 86-36

DOCID: 4009805

P.L. 86-36

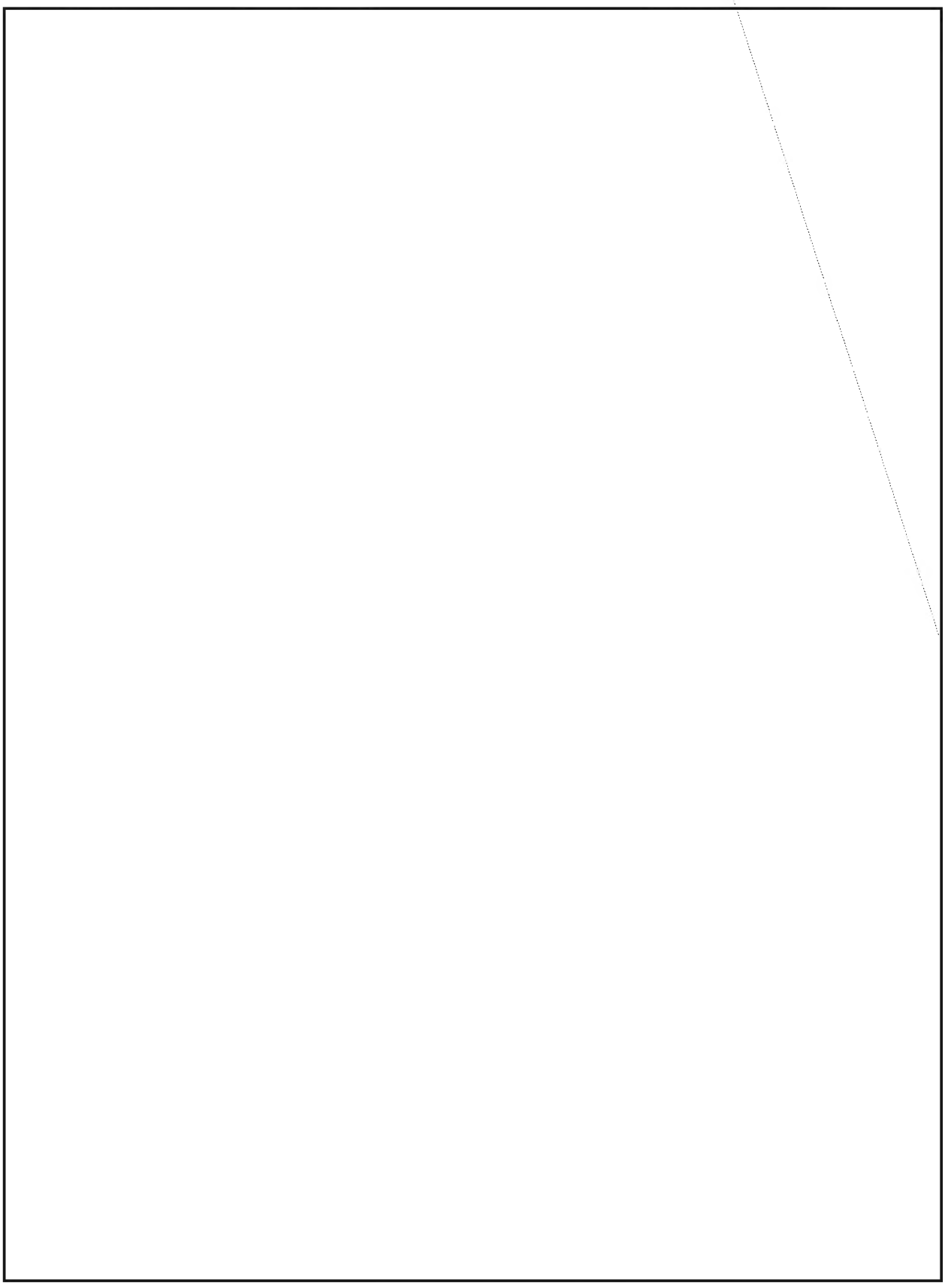
G422

t

EO 1.4.(c)
P.L. 86-36

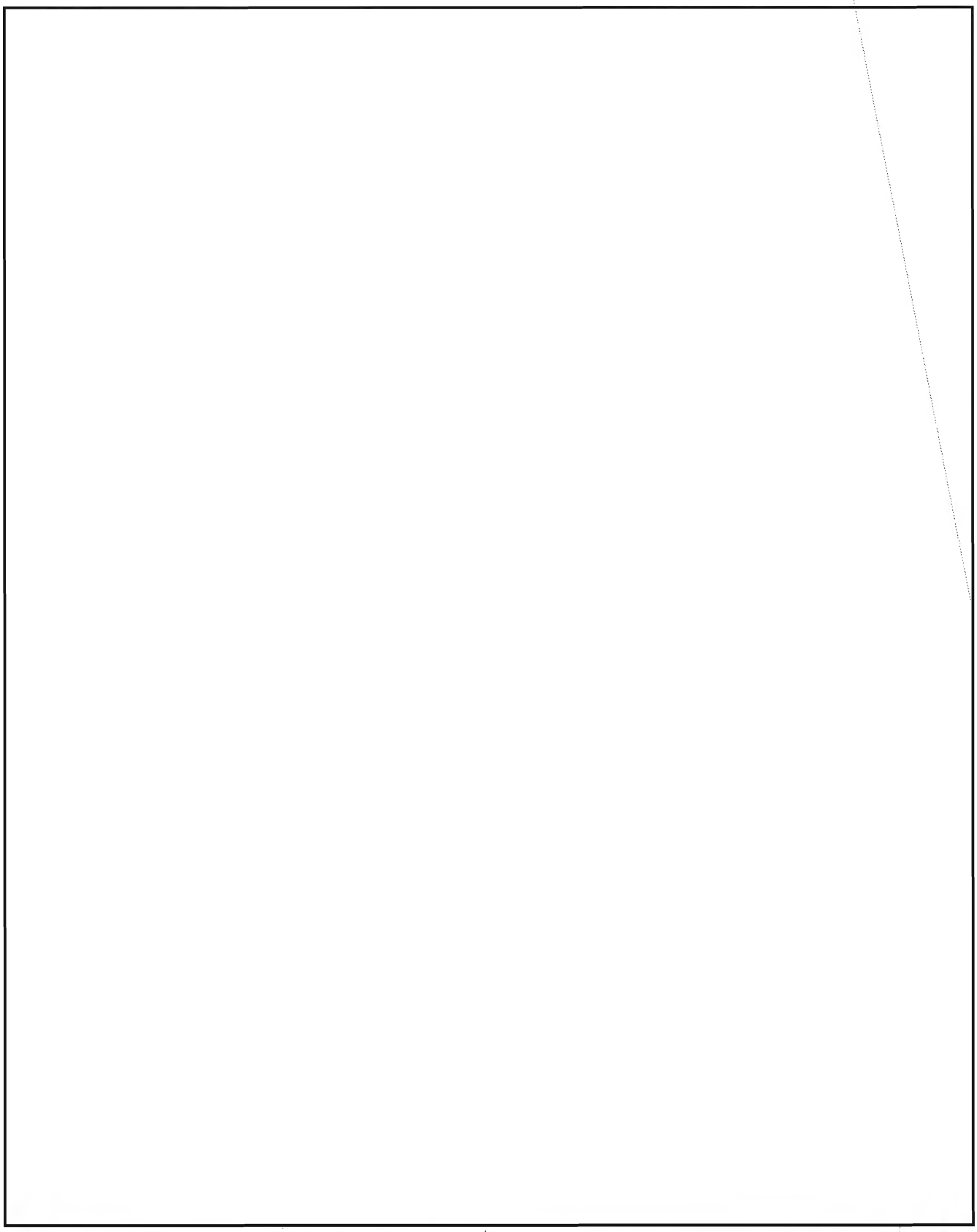
DOCID: 4009805

EO 1.4.(c)
P.L. 86-36



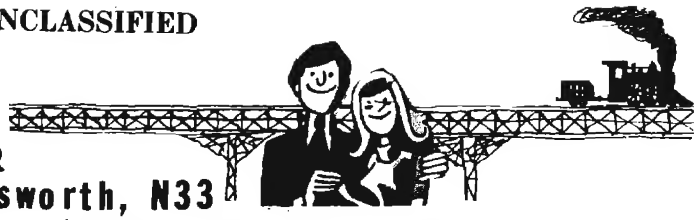
DOCID: 4009805

EO 1.4.(c)
P.L. 86-36



DOCID: 4009805

CONVERSATION WITH A MICROGRAPHICS PIONEER



Don Wigglesworth, N33

One frigid day last January the Federal Government Micrographics Council (FGMC) sponsored an "Introduction to Micrographics" program at the National Archives Theater at 19th and Pennsylvania. As the host, representing the FGMC, I had the job of introducing the speaker, Mr. Richard W. Batchelder, and, later, accompanying him to lunch.

In the course of our pleasant conversation during a much too heavy meal, I learned that Mr. Batchelder had spent the better part of his life in some phase of micrographics development both in the government and in private industry. Even though retired, he still participates from time to time in promoting this long-used information medium (it was first used for intelligence purposes in the Franco-Prussian War of 1870). But what particularly interested me was that I was talking to one who actually participated in the R&D of an information system which was of great intelligence value during WW II and which we at NSA still depend upon for information management and fast retrieval. Further, Mr. Batchelder's efforts during WW II took place only a floor or two above the theater in the Archives Building in which that day's program was unfolding.

The story is a repeat of the axiom "Necessity is the mother of invention." The "necessity" in this case was a requirement for a photographic data file on enemy countries that was critically needed for military operational purposes: pictures of geographical details, bridges, factories, rail yards, seaport facilities, the whole bit. Lacking Congressional appropriations for significant intelligence efforts during the pacifistic 1930s, the United States was at a disadvantage came the Pearl Harbor attack. U.S. intelligence services had only months to accomplish what the enemy had developed over the previous decade. "Wild Bill" Donovan's OSS was conceived to help do some fast catching up.

The OSS task included a crash effort to meet this particular need and this job was assigned to the Pictorial Records Division of OSS. In the summer of 1942 Mr. John F. Langan was made chief of this division and told to get on with the monumental task.

To establish a pictorial data base of sites of potential military importance, Langan issued a call to various government components and to Americans in general to send him photographs of any place in an enemy or enemy-occupied country. And, as you would expect, Americans responded with gusto. Langan was inundated with about a half a million pictures of, say, Aunt Suzie standing on the Remagen Bridge, or Cousin Chester at the docks at St. Nazaire, or Grandma enjoying the view from a dike on the Zuider Zee. Langan's staff had these photos stacked all over the place in the Archives Building while they were being sorted -- wheat from the chaff, that is. From the pile of 500,000 pictures they selected about 100,000 considered useful. But that was still a good pile to index and effectively access and constantly update as OSS agents began to send in new photos and as the daily demands of the intelligence consumers increased. As time passed, the demands on the hand system reached some 250,000 photos to be processed each month. The manual system simply couldn't hack it. Pure and simple, the problem was how to add to, subtract from, and sort the pictures on a timely basis.

Before the war Langan had been working on developing a better system to file and retrieve stock films for the movie industry. To solve the critical problem in the OSS Pictorial Records Division, he drew on his earlier efforts by experimenting with the possibility of using a tabulating card. The idea was to cut a rectangular hole in a free area of the card and to mount a microfilm of one photo in the hole. My lunch colleague, Mr. Batchelder, was assigned the then very difficult and tedious task of hand-cutting the rectangles in the Hollerith cards and trying to mount the microfilm in the "aperture." The real test came when they tried to run the cards through the sorter -- crossing their fingers that the cards wouldn't jam. But they did, regardless of the adhesive used to hold the film in place. One day, while in the basement of the Archives Building, Langan noted some sheets of plastic adhesive which was used for document preservation. He had this adhesive used to secure the film in the aperture and again the cards were tested in the sorter. And they shuffled quite nicely, thank you.

Langan also developed the machine-coding system to be punched in the card to permit sorting the micro photos by, say, longitude, latitude, geographic location, etc. With the help of the at first nonbelieving crowd from Endicott (they shuffled a bunch of Mr. Batchelder's handmade aperture cards in their own sorters before they would believe the idea would work), a massive effort was started to microfilm the thousands of photographs, to hand-mount them to the tabulating cards, and to index the cards via keypunch. By 1943 the first "aperture card" system was in operation in OSS. By a fast sorting of the cards, photos of a potential landing site in southern France, or a river crossing on the Rhine, or a rail yard at Dresden could be retrieved from the pile without waiting weeks or months for the pictures to be located.

Langan's cards with Mr. Batchelder's apertures are still with us and still effectively serving data needs in the intelligence business.

If it wasn't the devil, WHAT MADE THEM DO IT? (Study languages on their own, that is?)

P.L. 86-36

CRYPTOLOG's language editor, [redacted] asked four of the Agency's recognized multilinguists to talk about their experiences in studying foreign languages on their own. [redacted] John D. Murphy, and [redacted] all of P16, met with him and the following article is the result of their discussions.

What foreign languages have you studied on your own? Why did you select these languages?

[redacted] It's hard to remember which I've done myself and which I had in courses. I was in a graduate course at NYU where you got an entire family of languages at once. That gave me the background, as a matter of fact, for all the self-study I've done since. Of the 38 ancient and modern languages that I claim at least a reading and translation capability in, I'd guess that I've done half on my own and the other half with instruction of some sort.

Murphy: That's a difficult question. I've studied many languages, but a large number of those only in a casual way. But with intensity perhaps you might say Luganda, Albanian, Thai, Burmese, Bengali, Tamil, and Romanian.

[redacted] I'll try to stick just to those languages that I did learn on my own. I began with classical Greek when I was about 9 or 10. I switched to Russian by the time I got to prep school, because that was the thing to do. After Russian -- really simultaneously with Russian -- I took a crack at Japanese. I got to the point where I could actually do some reading in all of those, but I was hardly fluent in any of them.

Later on, upon my arrival at NSA, I studied languages for a different purpose. The first one I studied solely on my own was Indonesian. I am mainly self-taught in Czech and Turkish as well.

[redacted] The only one that I've done from scratch up through passing the PQE is Hungarian. I've done a lot of self-study in Russian, but that was after some formal classes at the beginning. Recently I've started looking at some books on Arabic and Chinese.

Is it important that you pick the language, i.e., from a psychological point of view is it better for self-study purposes that the language not be one someone told you to do?

Murphy: Even a language nut or language buff does not have an interest in certain languages. Sometimes you're told this is the language you are going to study. I have an aversion to neo-Indic languages like Bengali. But I was told that that was what I was going to do. So you construct an interest, you fake an interest for that period.

But some languages are more interesting than others. Everybody has a favorite. I like the highly agglutinated languages.

[redacted] I don't care for Persian at all.

[redacted] If there's one thing I have no desire to even look at, it's Korean. But I really like Hungarian. I think I'd like Turkish. I think enthusiasm is especially important for self-study.

[redacted] I've been lucky in that I've never yet encountered a language that I was completely unwilling to learn. But certainly I agree that some are a lot more interesting than others.

What sort of materials did you use? What do you look for in a textbook or recordings? Can you rely on a series, such as the Teach Yourself books?

[redacted] It certainly depends a great deal on what you want to accomplish. I have just been looking at a number of beginning Chinese books. Some were given entirely in romanization. Maybe that would fulfill entirely what somebody wanted to learn. If what they were after was speaking with comprehension, that would do. I don't like it myself, but that is possible.

[redacted] In my case many of the languages I've had to learn on my own in the last 11 years I've been here were learned simply for the purpose of teaching them to others. That certainly colors your outlook right from the start. For one thing, that means that I'm going to want to be able to use a book that I can teach from.

In some languages the choice of books is dependent simply on what if anything you can find. For example, in ancient Egyptian there is Gardiner, a couple of ancient things by Budge if you can find them, and a perfectly foul little thing

P.L. 86-36

P.L. 86-36

by Mercer. In some there is not enough of a choice to make a choice.

[redacted] Of course it depends on the purpose. I've always been guided by one of two purposes: first, the excitement and thrill of learning a new language in order to get at the literature and culture or the structure of the language; secondly, to master a tool.

Depending on which of these things I wanted to do, I would choose a particular reference grammar. Some reference grammars, or student grammars for that matter, are excellent at getting you to a point in Russian, let's say, where you can work on your own. Others are much better for purposes of historical reconstruction or literary aspects of the language.

Jack [Murphy] and I both like the pony technique for learning a language, and that will get you into the literature much more quickly. You have a valid English translation and learn as you go[1].

Murphy: I've been on Susu for a spell and you take the two or three things that exist. As far as the types of books are concerned, I like to hit a language from several points of view. And that brings to my mind the problem of the reader. I think that the most useless type of reader on earth is the chrestomathy, where you get a mass of texts with nothing else. If a person is capable of reading that, he doesn't need a course. It's much better to have a tiny amount of text annotated to within an inch of its life and glossarized. The Lund-Humphrey series is brilliant on that score. In Arabic, the Rabin reader in the Lund-Humphrey series is beautiful.

There is a great abundance now, compared to 1938, when the only thing that dominated the market was the Otto-Gaspé-Sauer series. The USAFI series, as a series, is the greatest thing that has been done. During World War II they made 21 of them, and with all the big guns in American linguistics. Bloomfield did the Dutch, Lukoff did the Hindi, Hockett the Chinese, Carleton Hodge the Serbo-Croatian.

The Teach Yourself series does not require any standardization from its authors and they bypass some very important languages. The one in Swahili is a model for learning to read the language; Bengali is an abomination. The one in Icelandic is magnificent as a reference grammar. It introduces 17 irregular verbs to the student in complete conjugation in one of the early lessons, before the student has even approached the regular verbs. Welsh is excellent and Irish is horrible. And the Finnish is a shambles.

[redacted] For beginning students in several languages I use the Teach Yourself series as a classroom text. Generally they range from fairly good to excellent. There are only a couple of bad ones. They are filling in the gaps in the series. They did finally come out with a Romanian. The one in modern Persian is very good for a rank beginner. The Samoan is lousy.

[redacted] Some of those in the Otto-Gaspé-Sauer series were excellent. The Turkish reader in the Indiana University Uralic-Altaic series is first rate, a super production, the best I've seen. On the other hand, the Turkish job in the Teach Yourself series is weak. I tried to teach from it no less than four times, with very meager results.

[redacted] One of the nice things about studying more than one language is that you can often find good books in a language you've studied already[2]. There are a lot of good books in German and Russian, I know.

Do you aim for a specific level of proficiency? Do you start with a certain application or goal in mind? Does that determine the level and type of proficiency you try for?

[redacted] I aim for Level 3 myself, regardless of the application, and hope that ultimately I can make Level 4, i.e., that I can read anything that an educated native speaker could read, without translating it in my own mind.

These readers that we were discussing will get you certainly, if you master them, to Level 2, which corresponds to the placement level of the NSA linguist. How far you can actually get with the best type of reader is a moot point. Whether it's possible to get to Level 3 or Level 4 is difficult to say.

Another point I would like to make is that there is always a trade-off involved: if you're going to be in a position where you have to get to Level 2 or 2+ in a lot of languages, you've got to give up the notion of getting to Level 3 or 4 global proficiency in five or six languages. You do one or you do the other, but you don't do it all.

What kinds of language proficiency can you get from self-study? Is it limited to reading proficiency, or can proficiency in aural comprehension, writing, and speaking be learned in this fashion too?

Murphy: If you use cassettes and tapes to a great degree, you can get aural comprehension. An interesting thing happened to me the other night in an English class for Spanish speakers. The native Spanish speakers I've met all have a horrible accent when speaking English. One girl

[1] In his article "Backing into Language Acquisition" (CRYPTOLOG, November 1977), [redacted] tells mathematicians how easy it is to learn foreign languages by already knowing the mathematical principles being discussed.

[2] For a discussion of how to use the knowledge of one foreign language to acquire another, see "Tool Languages," by John D. Murphy, CRYPTOLOG, July 1977.

in the class had a beautiful American English accent, much better than the others, though her educational level was not and I wondered why. She told me later that she had listened to tapes hour after hour during her English language course. To me that would be tedium to the ultimate, but it really helped her.

We must also distinguish between languages which are foreign to the first power and those which are foreign to the second power. French, Spanish -- the West European languages -- are not foreign in the sense that Burmese is foreign. And it takes a lot of chutzpah for an American to sit down and write a piece of text in Japanese, or Bhutanese, or Chinese. The Japanese and Hindis do this in English and they come to grief.

[redacted] I think it's much easier to say that you can learn more than just a reading knowledge via self-study, now that we have all these tapes and cassettes.

The only fault with that, of course, like TV instruction, is that the teacher can't stop and correct you when you do something wrong. You can't ask it a question that it isn't programmed to answer. The single question I encounter most often in my language classes is after I've said "That's the right answer," a student will ask "Could it also be done this way?" A key will never solve that.

[redacted] I aim for usable reading proficiency. That's just a personal taste and I don't think it's the same for everybody. People have said a great deal too much about the one correct way to do things. I think it's different for everyone.

[redacted] I think the interesting point here is that we're talking about the passive skills as far as self-study is concerned. Now I'm almost certain that you can't learn to speak a foreign language through self-study, and I'm quite sure that you can't learn to write either. There has to be someone who says "yea" or "nay" to what you're producing, whether written or spoken, and you're immediately out of the self-study mode.

How far can you go on your own before you do need help of some sort? Who do you turn to?

[redacted] Something I have come to believe in a great deal is making a lot of notes, even for languages like Hungarian or Russian which are supposedly well documented. If you write down enough sentences with snags of the same sort, if you can get a half-dozen or so examples of the same thing, it usually comes to mind what it must mean. This is a sort of window-index approach. Then also, if you are able to get the help of a native speaker, it's certainly a great deal better than trying to remember what you wanted to ask him.

I realize what heresy this is supposed to be, but I am not sold on the alleged sacredness of the native speaker. You do have to get a good one. Many people think you can talk to just any native. They are not professional teachers, they're not trained grammarians, and some of them have never thought about their own language. I think it makes a great deal of difference which native speaker you get help from.

Murphy: In the case of Luganda I worked alone for a long while before we hired a native. I had gone through the morphology and syntax and that was no problem. I could take a given piece of text and know the grammatical structure of each paragraph, and know the meaning of every single word and yet not know one damned thing they were talking about. This because of the complicated phraseology -- Luganda is a folk language and folk languages are highly poetic.

P.L. 86-36

[redacted] I would say that you can go an awfully long way on your own, perhaps all the way insofar as reading comprehension is concerned, if you are talking about West European languages. If you're talking about relatively badly documented languages, even languages like Turkish, you run out of aids eventually. You get difficult, complicated texts in these languages and there are no reference materials to cover them. That means turning to a native speaker because there's no other recourse.

[redacted] In many cases with the lower-density or minor languages you run out of aids at the point where you need them most, or even before that. I think it's just largely a combination of luck and how good your teaching aids are. Sooner or later you're going to ask a question that your teaching aid doesn't have an answer for. If you're lucky it's going to be later. If you're unlucky, it's going to be page one, lesson one.

How long does it take, approximately, to achieve a Level 2 reading proficiency in a foreign language? How much time per day or week do you spend studying a language? Is there an optimum amount of time to spend on self-study?

Murphy: Continuity is extremely important. It's much better, I think, if you have a limited amount of time, to spend a little bit of time every day rather than 3 hours on Sunday and then forget it.

On occasion I have had to study languages with extreme intensity. For example, Burmese: during a 9-month period I spent many hours eating, living, breathing, sleeping Burmese. Then I dropped it after having spent many, many hours on it. After 5 years had passed I remembered French and Spanish, which I studied on a much more leisurely basis, much better.

The curse of languages, though, is the fact that they have so many words and phrases. There's the matter of learning a mass of words. And it is not pleasant.

DOCID: 4009805
P.L. 86-36

P.L. 86-36

[redacted] I'm studying Sanskrit now on my own. The grammar offers me no great problem, for I feel that I am at least a pseudo-Indo-Europeanist, if not a full-fledged one. The writing system, on the other hand, requires a kind of visual memorization and association that I do not possess. I must put in 2 hours a day continually for 2-3 weeks before I feel I've made any progress.

I do think that there is probably a limit. A point of diminishing returns sets in, so that you can overdo it. But I think a couple of hours a day every day, over an extended period of time, is necessary. In fact, it's the only thing that will get you to where you want to go.

When you get to a certain point as a linguist, you can make very rapid progress in achieving Level 2, and then perhaps on to Level 3 in the grammatical structures. I feel today that I could take on any new language as far as its morphological and syntactic components are concerned. But learning that bloody vocabulary in one language after another is something I am increasingly less able to do as I grow older. It becomes exhausting.

[redacted] I would say that any consistent amount of daily study is worth 10 times the same amount of time in oddly assorted lumps, one week here, one week there. Even if it's only 15-20 minutes a day, that's better than 3 hours once a month.

How long it takes to get to Level 2 reading proficiency depends on the language and student. After the first 10 languages, they get easier. It sounds like a bad joke, but it's true.

[redacted] You get so you know what your own best pace is. But if you're starting in on self-study, it might be a good idea to avoid making arrogant announcements. If you don't tell your friends you're going to whip Japanese in 6 weeks, you won't have to tell them later that you didn't.

Is self-study a practical method of learning a foreign language? In the case of an African language it may be the only way, but should someone study French or German that way when classroom instruction is so readily available?

[redacted] Self-study is practical. In many instances it is really the only practical way. Let us suppose that one of us wants to acquire some reading knowledge, particularly to acquire a tool language such as Czech. More and more, very interesting information is coming out in the Czech language on a multitude of subjects. So he decides to learn Czech. A Czech course is going to involve months and months of going through baby drills and not very interesting exercises, whereas the learner knows just how he wants to learn the language and for what particular purpose. So it is intensively practical for a person to teach himself, and it is highly impractical to go and study at the feet of a native speaker.

A linguist should have a reading knowledge of French and/or German. That's a moral commitment. What we're talking about here goes a little beyond the question of self-study, but rather learning a tool language one way or another. That need is absolutely essential.

Murphy: It depends on the student's temperament. Some people learn best from courses. You've heard people say that they don't have the discipline. The only reason they take a course is for discipline.

You sign up for a course, you pay the university a rather substantial sum, and you spend night after night traveling. You can solve this problem by getting a good book and just turning to page one.

Do you think the Agency should place more emphasis on self-study of foreign languages? Should it promote it? If so, how?

[redacted] You might expect me to answer the question in the negative, because I wouldn't want to put myself out of a job teaching. But in the ultimate analysis, even in the classroom it is self-study. A teacher can't somehow infuse the knowledge into the student. The student has got to learn it himself. It's just self-study with a little more help than the textbook.

I think that paying people a bonus for acquiring a solid knowledge of a new language, upon passing a test at a certain level, is a good idea. It would certainly be a powerful incentive.

[redacted] I think so.

EO 1.4.(c)
P.L. 86-36

Murphy: Especially now that we have a good testing system where we can prove whether or not they've learned the language.

[redacted] We certainly should put more emphasis on self-study, if for no other reason than we can't always tailor schedules either in our own school or somewhere else so that instructor X is going to be on hand at a particular time when it is advantageous for student Y to begin studying the language.

Absolutely, we should pay people for acquiring new languages. [redacted] They overextended themselves to include the most commonly taught languages, so people began using it as a gravy train and they had to stop.

[redacted] Another thing I think the Agency should do that would hardly cost anything is advertise the fact that self-studiers should make a point of taking an Agency test in a language they've studied, whenever they feel ready to take it. It's very important to get your new proficiency on record. Supervisors can't give you credit for studying they don't know you've done.

What are the rewards -- personal and/or professional -- that you have experienced as a result of studying a foreign language on your own?

[redacted] In the first place, it's fun.

P.L. 86-36

P.L. 86-36

[redacted] I love it.

Murphy: Because it's there.

[redacted] I think we would all continue to study languages even if we weren't making a living at it.

Have you got your next language picked out?

[redacted] I'm doing Sanskrit now. My next one is Ge'ez (classical Ethiopic) -- my next and last!

[redacted] My next one is going to be a review. I'm going to brush up on Swahili.

[redacted] I'd like to try Arabic or Chinese.

Murphy: I've started Shona. That's going to be a winner, I hope. It has whistling fricatives. That's something you can't hardly get nowadays!

~~(C)~~

We've Caught a Glimpse of All That We Could Be

P.L. 86-36

[redacted]

We'll just say that we've been to the mountain,
And caught a glimpse of all that we could be.
We will know that a new day is dawning,
With a morning sun for all of us to see.

—From a folk hymn

Now that my term as President of the Communications Analysis Association (CAA) is over, I guess I can admit to you that what I have been trying to do during the past year was to start a minor revolution. The CAA Board of Governors and I, more or less deliberately, set out a year ago to change to some small degree the things we thought were bad for NSA by trying to restore a measure of excitement to the SIGINT business. We consciously sought to bring into the CAA younger, more vigorous people who would take *de facto* control and move the organization forward and make it an instrument of change. Our goal was to improve the people in NSA in mind and psyche stretching, making them more nearly complete SIGINTers (in accordance with our charter of cross-discipline actions). That we were less than totally successful is no failure; to have made a promising start was an achievement.

In the same spirit of confession, I can tell you too that we deliberately chose controversial speakers on controversial subjects, aiming at disturbing the apathetic. Cecil Phillips told us about our foolishness in expecting computers to think. Dave Gaddy drew parallels between our behavior and that of our counterparts of more than a century ago. Whit Reed talked about our common sense and the lack of it in living with remoting systems. [redacted] made us see that the future is now. Through our parties, we tried to show that zaniness and camaraderie have a place in professional life. And in our efforts to establish a program for the Communications Analyst, our work reached its more nearly crystalline form. The response to each of these moves was good, and our membership doubled during the year.

It was a good year and a satisfying experience for me. I've been accused from time to time of management-by-inspiration, and at least as far as CAA is concerned, I plead guilty. For to me the CAA represents a fertile field for creativity and innovation, for forward movement, for excellence. To the degree that CAA or any other learned organization fails to exploit new knowledge and to move forward in keeping NSA vital and alive, it has failed to execute its most important mission. With Dave Gaddy, a man of wisdom and wit, taking over CAA's presidency, I leave office comfortable that the future offers more promise than the past.

I don't often have a chance to say thank you in public. So this time I plan to make the most of it. Thanks to the entire Board of Governors for hard work, innovative thinking, and the wry maturity to keep me out of trouble. Thanks to Dave Gaddy and [redacted] for the constant streams of vigorous ideas. Thanks to Tim Murphy for his sober, good-natured hard work in keeping CAA solvent. Thanks to Dan Buckley and [redacted] for their brainstorming in drawing up a program for the Communications Analyst. And thanks too to all the program chairpersons -- too many to name -- for their work in setting programs for CAA. Thanks to all the members whose enthusiasm kept us going. And, most of all, thanks to the hardest worker of all, [redacted] who had to live with our hardy foolishness and carry out our ideas almost single-handedly.

Do you have the feeling that somebody is watching you? Maybe it's our Nominating Committee! They've been out scouting the countryside, looking for a slate of officers and board members for 1978.

Just one dollar a year. That's all it takes for you to become a member of CAA. Well, not quite all! You *do* have to fill out a membership card (call any officer or board member to get one) and then send the card and your dollar to the treasurer.

Coming soon-in January

The CAA General Meeting -- Election of the 1978 Board. Be there!

CAA Board:

President [redacted]
President-Elect David Gaddy, 3247s
Treasurer Timothy Murphy, 3791s
Secretary [redacted]
Board Members [redacted]

(U)

P.L. 86-36

DOCID: 4009805

HOW NOT TO MAKE AN O.B.

TITLE: ~~The Military Career of Lt. Darn~~

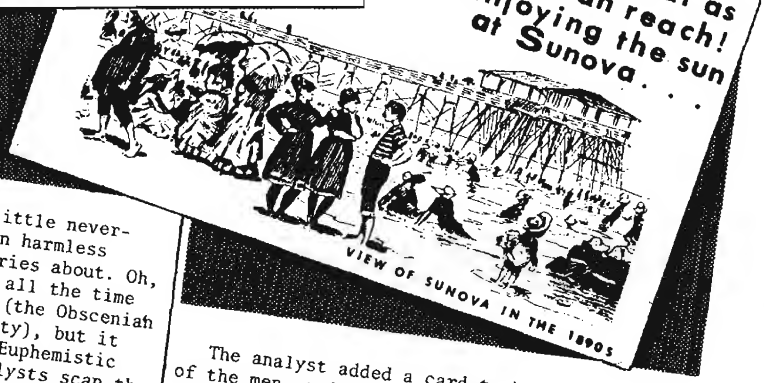
AUTHOR: Harry ~~H. G.~~ Rosenbluth

ORGN: P16

PUBLICATION: CRYPTOLOG ~~Commanst~~

DATE: ~~Feb 74~~ Dec 77

The following article appeared originally in the February 1974 issue of CommAnD (The Communications Analysts' Digest), a P1 publication no longer issued. A complete file of CommAND is available in the P1 Cryptologic library, Room 3W076. For information, call Mrs. Dorothy Rittenhouse, 4998s.



Euphemisia is a pleasant little never-never land which a certain harmless Pedantian SIGINT unit worries about. Oh, they don't worry about it all the time and it isn't their greatest worry (the Obsceniah problem is their number one priority), but it rates fairly high, especially the Euphemistic military forces. Two or three analysts scan the traffic when there is any -- and intercept is sporadic -- keeping files of names and units.

After several years of such reading and file-making, one of the analysts decided that the section had enough Euphemistic traffic on hand to put out an Order of Battle (OB) for Euphemesia and proceeded to do so. Of course, he went about it all wrong, and that is why this article is written: in the hope that if a reader sees any practices that match those described here, he or she will try to change those practices.

If this were a movie, we would now have a flashback showing the section in the 1960s, scanning and filing Euphemistic army, navy, and air force messages. One item in the batch is this one:

FROM WEST SNAFU TO CQ 20 JUNE 1962

THE FOLLOWING CADETS HAVE BEEN GRADUATED FROM THE EUPHEMISTIC MILITARY ACADEMY IN WEST SNAFU WITH THE RANK OF SECOND LIEUTENANT IN THE ARMY OF EUPHEMISIA:

BLANK, BLANKETY
BLEU, SACRE
CARAMBA, AY
DARN, GOL
(and eight more names)

The message was signed by the Army Chief of Staff.

The analyst added a card to his file for each of the men, and we will keep an eye on the file of one of them, newly commissioned Lt. Gol Darn.

LAST NAME: DARN	FIRST NAME: GOL	MIDDLE NAME: —
RANK: 2ND LT.		
UNIT: EUPHEMISTIC MIL ACADEMY		
LOCATION: WEST SNAFU		
POSITION: UNK		
REMARKS: P/T MSG LISTING 12 GRADUATES		
DATE: 20 JN 62		

There's one mistake! Once he graduated from the Academy, that shouldn't be listed as his unit unless he is being kept on as an instructor, and there was nothing in the message to suggest that.

About a week later, there was a large volume of traffic reflecting transfers and assignments, and 10 of the 12 academy graduates were noted, including Lt. Darn, who was sent to the 3rd Messkit Repair Unit in Dag, Nabit (Nabit in a state in northwestern Euphemisia, and Dag is its capital). The first card was removed and a new one was added:

~~HANDLE VIA COMINT CHANNELS ONLY~~

~~SECRET~~

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 2ND LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: DAG, NABIT

POSITION: UNK

REMARKS: P/T

DATE: 28 JN 62

Except for a few personal cables to his parents, Lt. Darn didn't pop up in traffic for almost a year when his signature appeared on a message to the Chief Motor Pool Officer at Third Division Headquarters in Istenem (to which 3rd Messkit Repair was subordinated), requesting a large number of tires and batteries for jeeps. The analyst changed the card to read:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 2ND LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: DAG, NABIT

POSITION: ~~UNK~~ MOTOR POOL OFFICER

REMARKS: P/T RQSTG 26 TIRES & 9 BATTERIES

DATE: ~~28 JN 62~~ 13 MY 63

Just as sleeping in a stable doesn't make you a horse, so asking a motor pool officer for tires and batteries doesn't make you a motor pool officer. It seems like a logical assumption, but should be given a validity indicator (C% and D%), or "POSS," or something to show that the title wasn't included in the message of 10 May.

It so happened that Lt. Darn was the Assistant Motor Pool Officer, as was proved 3 days later when the Chief Motor Pool Officer at division headquarters cabled back:

FM ISTENEM TO DAGNABIT 13 MAY 63

LT GOL DARN, ASST MPO 3MKRU

PER YR REQ 10 MAY, SENDING 13 TIRES, 5 BTRIES

MAJ DONNER WETTER, CMPO 3 DIV

The card was then changed to:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 2ND LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: DAG, NABIT

POSITION: ~~UNK~~ ASST MOTOR POOL OFFICER

REMARKS: P/T ~~RQSTG~~ ~~26~~ TIRES & ~~9~~ ABOUT BATTERIES

DATE: ~~28 JN 62~~ 13 MY 63

This would have been a good time to make a new card. That word "ASST" could easily get missed and that "3" written over the zero in the date is pretty hard to read. No doubt the analyst was in one of his lazy moods, changing the information about the request to cover the subject matter of the 13 May reply, but the card should have shown the fact that the message was addressed to "Lt. Gol Darn, Asst MPO."

There was a routine personnel message on 5 June 1963 from 3rd Messkit Repair to Army Finance in Euphemisia City asking that the beneficiary for Lt. Darn's army insurance be changed because on 10 June he would marry Miss Gosh Amighty and henceforth the beneficiary was to be his wife rather than his mother. If the analyst saw this, he ignored it because an officer's marital status wasn't necessary information.

But on 12 June Lt. Darn sent a cable to his parents:

FM SUNOVA TO CHORT 12 JUN 63

MR AND MRS O. H. DARN, 69 DRAT STREET, CHORT

GOSH AND I ARE VERY HAPPY IN OUR HONEYMOON COTTAGE STOP LOVE FROM US BOTH

LT GOSH DARN

He signed the cable with his rank and full name because he could send it cheaper that way, but that signature caught the analyst's eye, and he noted that Lt. Darn was no longer in Dag, Nabit, so he reasoned that the 3rd Messkit Repair Unit must have moved, and he changed the card:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 2ND LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: ~~DAG, NABIT~~ SUNOVA

POSITION: ~~UNK~~ ASST MOTOR POOL OFFICER

REMARKS: P/T ~~RQSTG~~ ~~26~~ ~~TIRES & 9~~ ~~ABOUT~~ ~~BATTERIES~~

DATE: ~~28 JN 62~~ ~~13 MY 63~~ 12 JN 63

~~SECRET~~

The analyst should not have assumed a move of the unit on the basis of an unofficial message. Units go to other areas for maneuvers, but the reason that this message was sent from Sunova is that it's Euphemisia's most famous summer resort and the place where many Euphemists go on their honeymoons. A week later he was back on the job, and our analyst had to change the card back:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 2ND LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: ~~DAG, NABIT~~ ~~SUNOVA~~ DAG, NABIT

POSITION: ~~UNK~~ ASST MOTOR POOL OFFICER

REMARKS: P/T ~~REPTS~~ ~~ABOUT~~ ABOUT AUTO PARTS ~~TIRES~~ ~~&~~ ~~BATTERIES~~

DATE: ~~28 JN 63~~ ~~19 MY 63~~ 19 JN 63

There was still some room left on the card, but the analyst decided to be neat when the lieutenant got promoted, so a new card appeared:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 1ST LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: DAG, NABIT

POSITION: ASST MOTOR POOL OFFICER

REMARKS: P/T MSG FROM CHIEF OF STAFF

DATE: 1 JAN 65

And about a month later, still using his army signature because it was cheaper, he cabled his parents:

FM HECK TO CHORT 3 FEB 65

MR AND MRS O. H. DARN, 69 DRAT STREET, CHORT

HAVE BEEN TRANSFERRED STOP OUR NEW ADDRESS IS 123 GOTOBLAZES STREET, HECK. GOSH SENDS LOVE

LT GOL DARN

The analyst changed the record to show:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	—

RANK: 1ST LT.

UNIT: 3RD MESSKIT REPAIR UNIT

LOCATION: ~~DAG, NABIT~~ HECK

POSITION: ASST MOTOR POOL OFFICER

REMARKS: PERSONAL MSG TO HIS FAMILY ~~P/T MSG FROM CHIEF OF STAFF~~

DATE: ~~1 JAN 65~~ 3 FEB 65

The only trouble was that he was not still assistant motor pool officer of the 3rd MKRU. He was now assistant supply officer of the 678th Infantry Battalion in Heck. The official message announcing his transfer was not intercepted. He moved to Heck because he had a new job in a new unit, but the card doesn't reflect that.

Two years later his name appeared on another promotion list, with his first name misspelled as GOLL. The analyst assumed that the second L was a middle initial and made a new card:

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	L

RANK: CAPT.

UNIT: 3RD MKRU

LOCATION: HECK

POSITION: ASST MOTOR POOL OFFICER

REMARKS: OFFICIAL PROMOTION LIST

DATE: 1 JN 67

The spotty intercept didn't yield much more about him for 2 more years, when a personal message from him to his parents announced:

FM HECK TO CHORT 1 JUN 69

MR AND MRS. O H DARN, 69 DRAT ST, CHORT

TODAY I GOT PROMOTED TO MAJOR STOP YOUR LOVING SON

GOL

Apparently majors can affort to pay the higher rate because he didn't use his rank and

~~SECRET~~ ~~HANDLE VIA COMINT CHANNELS ONLY~~

full name, but the analyst spotted the message, checked the name, and found a Capt. Gol Darn. It turned out to be a valid assumption, but you'd be surprised how many Latin American second lieutenants are named José Jiménez, or how many German captains are named Heinrich Mueller, or how many American officers yclept George Smith there are. A personal message is not nearly as valid as an official promotion list. The Gol Darn example is better than average since he signed his cable to Mr. and Mrs. Darn as "your loving son," implying that his last name is also Darn; the captain in question has previously sent messages to the Darns on Drat Street; and Captain Darn was in Heck. But Pedantian analysts have been known to have conflicting entries in their files because there are two or more individuals with the same name.

Well, a month later, Major Darn received a cable from his parents:

FROM CHORT TO BLAST 1 JUL 69

MAJOR AND MRS GOL DARN 222 DANG STREET, BLAST

OUR LOVE TO YOU IN YOUR NEW HOME AND BEST WISHES TO OUR SON AS HE ASSUMES HIS FIRST COMMAND

YOUR PARENTS

This warranted making out a new card.

LAST NAME	FIRST NAME	MIDDLE NAME
DARN	GOL	L

RANK: MAJOR

UNIT: 3RD MKRU

LOCATION: BLAST

POSITION: CO

REMARKS: PERSONAL MSG

DATE: 1 JUL 69

Notice that he's still being carried as being in the 3rd MKRU -- and by this time there's probably a new analyst on the problem who doesn't have the slightest idea what that abbreviation expands to -- although Darn hasn't been in the 3rd MKRU for years. He's commanding officer of something, but the analysts never got traffic mentioning his unit in the interim.

Over the next year or so, there were occasional messages to units and individuals, all signed "DARN CO," as well as personal messages to his wife and parents. The analyst changed the last two lines on the card to show the type of message and the date that his name was last seen.

In 1972 the section decided to put out an Order of Battle for Euphemisia, so the analyst dug out his cards, ruled off some paper into columns, and proceeded to transfer the information. When he reached the card for DARN, the analyst wrote:

LAST NAME	RANK	FIRST NAME	MIDDLE NAME
DARN	MAJOR	GOL	L.

POSITION	UNIT	LOCATION	DATE LAST SEEN IN TFC
CO.	3RD MKRU	BLAST	4 JAN 72

Just then a new batch of traffic came in and one of the messages was:

FM SUNOVA TO CHORT 12 JUN 72

MR AND MRS O.H. DARN, 69 DRAT ST, CHORT

CAME BACK HERE TO CELEBRATE OUR NINTH ANNIVERSARY STOP OUR KIDS REALLY LIKE IT AND SEND THEIR LOVE TO GRANDMA AND GRANDPA

GOL AND GOSH

Recognizing a familiar name, the analyst changed the entry in the last column to "12 Jun 72" and went on with his order of battle, blissfully unaware that he was compiling quite a bit of false information.

Fortunately, a checker came across the entry and thought that major was an awfully high rank for the CO of a messkit repair unit. He checked with the analyst, who, fortunately, had saved all the traffic and they discovered that the messkit repair unit hadn't been mentioned since 1962. A similar check on that middle initial revealed that it hadn't been seen since that original garble in 1967. The only thing that was dated 12 June 1972 was the fact that there was somebody named Gol Darn in Euphemisia.

The checker suggested that the dates of each bit of information be shown to give the recipients a more honest picture. The DARN entry would then be:

LAST NAME	RANK	FIRST NAME	MIDDLE NAME	POSITION	UNIT	LOCATION	DATE LAST SEEN IN TFC
DARN	MAJOR	GOL	L.	CO	3RD MKRU	BLAST	12 JUN 72
12 JUN 72	1 JUN 69	12 JUN 72	1 JUN 67	1 JUN 69	13 MAY 63	1 JUN 69	

The analyst blew a fuse. This would take a million years to check out and write in, and none of the recipents would look at the dates anyhow, etc., etc. Well, suggested the checker, how about a note with that last-seen date, explaining how much of the entry it verified (in this case, just the name), and again the analyst objected, "Then the user will doubt all the rest of it and all the rest isn't necessarily wrong!" The checker asked if any attempt had been made to check with the Central Library to see if they had any information that could fill in some of the gaps, to which the analyst replied, "This is supposed to be an all-COMINT OB! We don't want any collateral in it!" The checker explained that it could still be a COMINT-based OB with collateral being used to fill in the gaps. Collateral isn't all bad! The analyst seemed unconvinced, and so did the branch chief.

The checker resigned himself to putting out an all-COMINT (and largely erroneous) OB. His suggestion about validity indicators on each entry --

(A% DARN) (A% Major) (A% Gol) (D% L)
(B% CO) (D% 3rd MKRU) (B% Blast) 12 Jun 72

-- was also vetoed.

When the checker found the entry

DURN 1st Lt Gol _____ _____ 678 Inf Bn Heck
10 Mar 65

he was struck by the similarity of names, so he asked the analyst if DARN and DURN might be the same person. The traffic file on 1st Lt. Gol Durn consisted of one piece of paper:

FM EUPHEMISIA CITY TO HECK 10 MAR 65

CO, 678 INF BN

TELL 1ST LT GOL DURN OF YOUR BN THAT MONTHLY SUBMISSION OF USED FLYPAPER REPORT NO LONGER REQUIRED

CHIEF G4

The analyst couldn't prove whether DARN and DURN were the same person, but he also couldn't prove that they weren't. So, despite the dictum of "no collateral in all-COMINT OB," the checker called the Central Library to see if they had any further information about 1st Lt. Gol Durn, explaining that he thought it might be a garbled reference to the man who was now Major Gol Darn. . . and as long as he was on the phone, he also asked if they had any information about what unit Major Darn was CO of.

The Library analyst replied:

(1) that there was no trace of anybody named GOL DURN in any of their Euphemisia files;

(2) that among the items in those files was the official Euphemistic Army Officers List for 1 June 1972, which went all the way down to second lieutenant and the cadets in the military academy who would soon be second lieutenants;

(3) that this list gave the name, rank, date of rank, position, and location of every officer in the Euphemistic Army; and

(4) that, as of 1 June 1972, Major Gol Darn was a lieutenant colonel, assigned to the West Snafu Military Academy as Deputy Assistant Commandant.

The analyst thought that this was cheating. He insisted that he wanted an all-COMINT order of battle and the checker had no right trying to get collateral. The fact that this wasn't ordinary old run-of-the-mill collateral, but was an official document from the Euphemistic Defense Department put out for their own use, so he could be sure of its accuracy, didn't seem to impress him. He was still convinced that COMINT was better. However, even the branch chief had to admit that it would look pretty silly putting out an OB that conflicted with such a document. The Euphemistic Order of Battle project was allowed to die, but the analyst was urged to keep making files just in case those Euphemists ever stopped giving that Officers List to the Pedantian military attache.

DOCID: 4009805

WHAT IS PATTERN RECOGNITION?

[redacted] R51

Pattern recognition is concerned with answering the following two questions:

- How does one describe a pattern so that a machine can recognize it?, and
- How does one design a machine so that it can recognize a pattern?

The word "recognition" as used here means either classification or description, or both. Classification is the identification of the pattern with one of several predetermined classes. It may sometimes happen that the pattern is associated with more than one class (this is called multimembership data) or the pattern item may be regarded as an "outlier," a nonmember of any of the classes. The classification process involves deriving a decision rule from a set of samples of known class membership (this is the learning or training phase) and then evaluating the rule on another set of samples of known class membership (this is the testing phase).

The input to a pattern recognition system may be any of the following:

- vectors of measurements,
- one-dimensional time waveforms,
- two-dimensional images.

There are two basic models for a pattern recognition system:

- decision-theoretic,
- syntactic-structural (sometimes called linguistic or grammatical).

Hybrid models are, of course, possible.

In the decision-theoretic model, *features* or distinguishing characteristics are derived from the input. This process is called *feature extraction*. The number of features should be relatively small and carefully chosen to separate members of the different classes. Each vector of features is then identified with one of several predetermined classes via a prescribed decision rule.

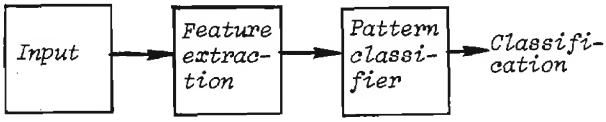


Fig. 1. Schematic of a decision-theoretic pattern recognition system

As a simple example of a decision rule, consider the data structure depicted below.

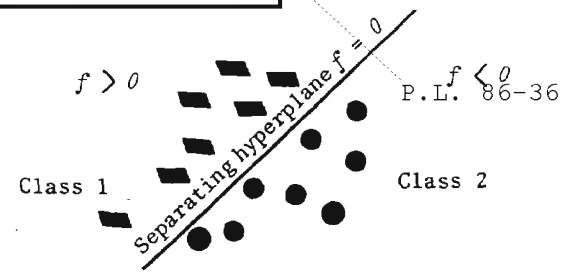


Fig. 2. Linearly separable classes in two-dimensional feature space

The two classes may be separated perfectly by a linear function $f(x_1,x_2) = w_1x_1 + w_2x_2$, where (x_1,x_2) is a feature vector to be classified and w_1 and w_2 are parameters that define the classifier.

The decision rule is as follows:

- if $f(x_1,x_2) > 0$, identify (x_1,x_2) with Class 1,
- if $f(x_1,x_2) < 0$, identify (x_1,x_2) with Class 2,
- if $f(x_1,x_2) = 0$, make no identification.

The most commonly used decision rules in pattern recognition are:

- minimum distance classifiers,
- nearest neighbor classifiers,
- maximum discriminant function classifiers.

[redacted]

In the syntactic-structural model, the objective is pattern description as well as classification. The input is represented by a language-like structure (e.g., a string of symbols or a graph) in terms of relations among subpatterns called *primitives*. The syntax analyzer then decides whether or not the pattern belongs to the class described by a given grammar. If the pattern is syntactically correct with respect to

EO 1.4.(c)
P.L. 86-36

EO 1.4.(c)
P.L. 86-36

~~SECRET SPOKE~~

that grammar, it usually may be described in terms of a parse or parsing tree. Otherwise the pattern is either excluded from further consideration or is analyzed with respect to other given grammars (each describing a different class).

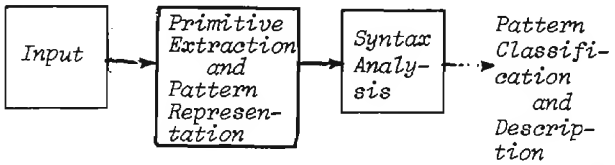


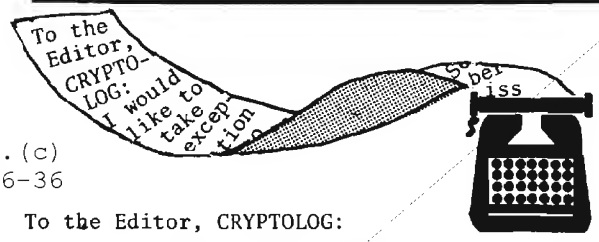
Fig. 3. Schematic of a syntactic pattern recognition system

[redacted]

If you have any questions about these approaches or about the possibility of applying these techniques to your operational problem, please contact either [redacted] (R51, 3461s) or [redacted] (R51, 5228s).

P.L. 86-36

~~(S)~~



P.L. 86-36

EO 1.4.(c)
P.L. 86-36

To the Editor, CRYPTOLOG:

I would like to take exception to some remarks made by [redacted] in the September issue [redacted] As a linguist/analyst/reporter who daily uses the [redacted] program, I believe that I am qualified to discuss the system.

[redacted]

[redacted] B41

~~(SC)~~

P.L. 86-36
EO 1.4.(c)

P.L. 86-36

~~SECRET SPOKE~~

DOCID: 4009805

1977 INDEX

The following index of the articles published in Volume IV, 1977, of CRYPTOLOG should be used in conjunction with the separately published CUMULATIVE INDEX (Vols. I through III, 1974-1976). The next cumulative index will be published next year.

The index below adheres to the format of the Cumulative Index, which was computer-produced using the Super Bee CRT/Tycom typewriter terminal on the B6700 and programs written by George P. Wood, P16.

The index is in two parts. The first part is an index of titles, listed alphabetically (1) by title and (2) by keyword in the title. A few titles have also been assigned, by human intervention, keywords that do not appear in the titles. The second part is an index of authors. In both parts, multiple entries are listed in chronological order.

Items appearing in the January-February double issue are indicated by "Jan 77."

EO 1.4.(c)
P.L. 86-36

EO 1.4.(c)
P.L. 86-36

Titles

P.L. 86-36

A

ABNER
Early Days in NSA Computing — [redacted] — Aug 77

AFRICA
How Many African Countries Can You Spot? — [redacted] — Nov 77

AG-22/IATS
The Last Word on IATS — Phillips — Apr 77
A View from the Bridge — [redacted] — Jun 77
Another Last Word on IATS — [redacted] — Sep 77

AI
Another Controversial Book on Artificial Intelligence — [redacted] — May 77
The Doctor Is In(capable of Diagnosing) — [redacted] — Sep 77
[redacted] — [redacted] — Nov 77

ANALYST, ANALYSTS
What Is an Information Research Analyst? — [redacted] — Aug 77

Analyzation of Data — [redacted] — Oct 77

Another Controversial Book on Artificial Intelligence — [redacted] — May 77

ARTIFICIAL INTELLIGENCE
Another Controversial Book on Artificial Intelligence — [redacted] — May 77
The Doctor Is In(capable of Diagnosing) — [redacted] — Sep 77
[redacted] — [redacted] — Sep 77

B

Backing into Language Acquisition — [redacted] — Nov 77

BALLONI
[redacted] Editor — A.J.S. — Sep 77
[redacted] — [redacted] — Mar 77
[redacted] — Buck — Jul 77
[redacted] — [redacted] — Jul 77

BUDGETING
ZBB? What in the World Is That? — [redacted] — Jul 77

C

CAA
CAA News: What Ever Happened to the CAA? — [redacted] — Jul 77
CAA News: What Are They Up to Anyway? — [redacted] — Aug 77
CAA News: Whom? — [redacted] — Sep 77
CAA News — [redacted] — Oct 77
CAA News — [redacted] — Nov 77
CAA Message and News — [redacted] — Dec 77

[redacted] — [redacted] — Mar 77

CALLIMAHOS, L. D.
Tribute to the Guru — Class 32 — Sep 77

CHINESE
Backing into Language Acquisition — [redacted] — Nov 77
Choose Ye! — [redacted] — May 77

CIPHER
Old Russian Manuscript Ciphers — [redacted] — Jun 77

CLASSIFICATION
Classification Corner — [redacted] — Jul 77
Classification Corner: XGDS-2 — [redacted] — Sep 77
Classification: A Bigger Picture — [redacted] — Oct 77
Classification Corner: Who Said? — [redacted] — Oct 77

C-LINERS
Letter to editor -- C-LINERS article — "Appalled" — Mar 77

COLLECTION
Objective Satisfication Score; Collection Performance — [redacted] — Nov 77

COMPUTER, COMPUTERS
A View of the Central Computer Complex in the Late 1970s and Early 1980s — Phillips — Mar 77
Contemplating Computing — [redacted] — Apr 77
Early Days in NSA Computing — [redacted] — Aug 77
Contemplating Computing — [redacted] — Apr 77
Conversation with a Micrographics Pioneer — Wigglesworth — Dec 77

[redacted] — [redacted] — Mar 77
Which Tape Has the Intelligence: Project [redacted] — Gurin — Jul 77

CRYPTANALYSIS, CRYPTANALYSTS
[redacted] — [redacted] — Dec 77

CRYPTOGRAMS, CRYPTOGRAPHIC
Want to Play with a Pickfair Square? . . . — [redacted] — Aug 77

D

DATA
DIALOG Available at NSA . . . — [redacted] — Aug 77
Dating Game — [redacted] — Jul 77
[redacted] — [redacted] — Sep 77
DIALOG Available at NSA . . . — [redacted] — Aug 77
Director's Memorandum: [redacted] Guidance" — DIRNSA — Nov 77

DOCUMENTATION
Is There a Doctor in the House? — [redacted] — Sep 77
The Doctor Is In(capable of Diagnosing) — [redacted] — Sep 77

E

Early Days in NSA Computing — [redacted] — Aug 77

P.L. 86-36

EO 1.4.(c)
P.L. 86-36

P.L. 86-36

DOCID: 4009805

EO 1.4.(c)
P.L. 86-36

P.L. 86-36

~~TOP SECRET UMBRA~~

ENGLISH
Choose Ye!
Plain English
Vich Iss R-r-right?
What Ever Does "However" Mean?
[redacted]
Executive Order 11652
Expletives Deleted?

F

A Few Thoughts on the NSA Linguist
FIELD
K1 -- SCA Field Management and Evaluation
Flash! 115th SRI Located!
[redacted]

G

GERMAN
Backing into Language Acquisition
GOLDEN OLDIES
GOLDEN OLDIE: A Medal for Horatius
GOLDEN OLDIE: Analyzation of Data

H

[redacted]
How Many African Countries Can You Spot?
[redacted]
Human Factors and Systems Design -- An Estranged Relationship?
Human Factors in the Use of Microfiche Readers at NSA

I

The "Ice Age" and International Security
INFORMATION
What Is an Information Research Analyst?
INKSTAND
SIGINT Welcomes INKSTAND
IRA
What Is an Information Research Analyst?
Is There a Doctor in the House?
"It's Got to Get Out Today!"

J

JAPANESE
The Transcription Skill: Concepts and Teaching Methodologies
JPRS Language Reference Aids

K

KEYWORD
Letter to editor -- Keyword spotting
KILOMETER
Vich Iss R-r-right?
Knowledge Resource Management at NSA
K-1 -- SCA Field Management and Evaluation

L

LANGUAGE
"It's Got to Get Out Today!"
[redacted]
Tool Languages
JPRS Language Reference Aids
The [redacted] Seminar Program

Backing Into Language Acquisition
Language Processing Forum
What Made Them Do It? (Language Self-Study)
The Last Word on IATS?
Let Me Repeat -- And Make Myself Perfectly Clear
LETTERS TO EDITOR
Letter to editor -- "Firebrand" letter
Letter to editor -- [redacted] article
Letter to editor -- Mason article
Letter to editor -- Use of term "compartmented"
Letter to editor -- [redacted] interview
Letter to editor -- [redacted] article
Letter to editor -- C-LINERS article
Letter to editor -- Keyword spotting
Letter to editor -- [redacted] article
Letter to editor -- [redacted] article
Letter to editor -- [redacted] letter
Letter to editor -- Mason article
Letter to editor -- Mason article
Letter to editor -- Mason article
Letter to editor -- "Horatius"
Letter to editor -- Buckley letter
Letter to editor -- [redacted] article
Letter to editor -- Mason article
Letter to editor -- [redacted] article
Letter to editor -- [redacted] article
Letter to editor -- Subscription
Letter to editor -- [redacted] article
Letter to editor -- [redacted] article
Letter to editor -- Subscription
Letter to editor -- [redacted] letter
Letter to editor -- [redacted]
Letter to editor -- [redacted] "Early Days...Computing"
Letter to editor -- Salemme "Expletives Deleted?"
Letter to editor -- Salemme "Expletives Deleted?"
Letter to editor -- [redacted] article
[redacted]

LINGUIST
What If the Linguists Disappeared?
A Few Thoughts on the NSA Linguist

A Little TA Problem
LOG
Speaking of Logging. . .

M

MANUAL
Revised Technical SIGINT Manual in Preparation
[redacted] Guidance (Director's Memorandum)
Match Them Up!
A Medal for Horatius
MICROFICHE
Human Factors in the Use of Microfiche Readers at NSA
MICROGRAPHICS
Conversation with a Micrographics Pioneer
[redacted]
More about More about the NSA SIGINT Summary
More about the NSA SIGINT Summary

N

New Directions for the U.S. Intelligence Community
NSA-CROSTIC
NSA-Crostic No. 6
NSA-Crostic No. 7

May 77
May 77
Jun 77
Nov 77
Dec 77
Jan 77
Aug 77
Mar 77
Oct 77
Apr 77
Oct 77
Nov 77
Jan 77
Oct 77
Dec 77
Nov 77
Jun 77
Oct 77
Apr 77
Aug 77
Jun 77
Aug 77
Sep 77
Apr 77
Jul 77
Sep 77
Mar 77
Jun 77
Sep 77
Oct 77
Apr 77
Jul 77
Jul 77
Sep 77
Sep 77

Nov 77
Nov 77
Dec 77
Apr 77
Aug 77
Jan 77
Mar 77
Mar 77
Mar 77
Mar 77
Apr 77
Apr 77
Apr 77
Apr 77
Apr 77
May 77
Jun 77
Jun 77
Jun 77
Jul 77
Jul 77
Jul 77
Jul 77
Aug 77
Aug 77
Sep 77
Oct 77
Nov 77
Nov 77
Nov 77
Dec 77
Jul 77
Jan 77
Mar 77
Nov 77
Sep 77
Mar 77
Nov 77
Jul 77
Jan 77
Oct 77
Dec 77
Nov 77
Jun 77
Mar 77
Aug 77
Jan 77
Apr 77

P.L. 86-36

~~TOP SECRET UMBRA~~

EO 1.4.(c)
P.L. 86-36

P.L. 86-36

DOCID: 4009805
EO 1.4.(c)
P.L. 86-36

P.L. 86-36

NSA-Crostic No. 8 — A.J.S. — Jul 77
NSA-Crostic No. 9 — Williams — Sep 77
NSA-Crostic No. 10 — A.J.S. — Nov 77

NUMBERING SYSTEM
Which Numbering System Should We Use — "Asken" — Oct 77

O

Objective Satisfaction Score: Collection Performance — Nov 77
Old Russian Manuscript Ciphers — Jun 77
[redacted] — Dec 77
An Overview of Project [redacted] — Mar 77

P

Partners in the Exciting Future of SIGINT — Oct 77
PATTERN RECOGNITION
What Is Pattern Recognition? — Dec 77
The Perils of Being a State Department Interpreter — Oct 77
Plain English — May 77
[redacted]
An Overview of Project [redacted] — Mar 77

The Polyhedral War — May 77

Postscript to "Dating Game" — Aug 77
PROFESSIONALIZATION
Some Thoughts on the Russian PQE — Apr 77
PROMOTION
A Proposed Cure for the Time-in-Grade Syndrome — Nov 77
A Proposed Cure for the Time-in-Grade Syndrome — Nov 77
PUZZLE
Match Them Up! — Jul 77

R

RESEARCH
What is an Information Research Analyst? — Aug 77
RESOURCE MANAGEMENT
Knowledge Resource Management at NSA — Sep 77
Revised Technical SIGINT Manual in Preparation — Filby — Mar 77
RUSSIAN
Some Thoughts on the Russian PQE — Apr 77
Why Are These People Smiling? — Harrison — May 77
Old Russian Manuscript Ciphers — Jun 77
[redacted]
Backing into Language Acquisition — Sep 77 / Nov 77

S

SIGINT
More About the NSA SIGINT Summary — Mar 77
Revised Technical SIGINT Manual in Preparation — Filby — Mar 77
More About More About the NSA SIGINT Summary — Jun 77
SIGINT Welcomes INKSTAND — Jun 77
Partners in the Exciting Future of SIGINT — Rosenblum — Oct 77
"Simonoff Says!" — A.J.S. — Sep 77
Some Thoughts on the Russian PQE — Apr 77
[redacted] — Nov 77
SPANISH
Telling It Like It Is — Santiago-Ortiz — Aug 77
Speaking of Logging. . . — Sep 77
SPECIAL RESEARCH ANALYSIS
Whither the SRA? — Sep 77
SPOTTING
Letter to editor -- Keyword spotting — Gurin — Mar 77

STATE DEPARTMENT
The Perils of Being a State Department Interpreter — . . . — Oct 77
A Story With a Moral — May 77
SYSTEM DESIGN
Human Factors and Systems Design -- An Estranged Relationship? — Jun 77

T

TA
A Story With A Moral — May 77
Which Numbering System Should We Use? — "Asken" — Oct 77
A Little TA Problem — Nov 77
[redacted] — Dec 77
TEACHING
The Transcription Skill: Concepts and Teaching Methodologies — Jul 77
[redacted] — Nov 77
Telling It Like It Is — Santiago-Ortiz — Aug 77
The [redacted] Seminar Program — Sep 77
[redacted] — Buck — Jul 77
Tool Languages — Murphy — Jul 77
TRAFFIC ANALYSIS
[redacted] — Dec 77
A Story With a Moral — May 77
Which Numbering System Should We Use? — "Asken" — Oct 77
A Little TA Problem — Nov 77
[redacted]
The Transcription Skill: Concepts and Teaching Methodologies — Jul 77
TRANSCRIPTION
Why Are These People Smiling? — Harrison — May 77
Which Tape Has the Intelligence: Project [redacted] — Gurin — Jun 77
The Transcription Skill: Concepts and Teaching Methodologies — Jul 77
Telling It Like It Is — Santiago-Ortiz — Aug 77
TRANSLATION, TRANSLATOR
"It's Got to Get Out Today!" — Apr 77
What Ever Does "However" Mean? — Nov 77
Tribute to the Guru — Class 32 — Sep 77

UV

Universes, Galaxies, Stars, Bars, and Other Concepts — Phillips — May 77
[redacted] — Oct 77
Vich Iss R-r-right? — A.J.S. — Jun 77
A View from the Bridge — Jun 77
A View of the Central Computer Complex in the Late 1970s and Early 1980s — Phillips — Mar 77

W

Want to Play with a Pickfair Square? — . . . — Aug 77
What Are They Up To, Anyway? (CAA News) — Aug 77
What If the Linguists Disappeared? — Jan 77
What Is an Information Research Analyst? — Aug 77
What Is Pattern Recognition? — Dec 77
What Ever Does "However" Mean? — Nov 77
What Ever Happened to the CAA? — Jul 77
What Made Them Do It? (Language Self-Study) — Dec 77
Where Were We? — Mason — Jan 77
Which Numbering System Should We Use? — "Asken" — Oct 77
Which Tape Has the Intelligence: Project [redacted] — Gurin — Jul 77

EO 1.4.(c)
P.L. 86-36

P.L. 86-36

Whither the SRA? [redacted] Sep 77
Why Are These People Smiling? Harrison May 77

XYZ

XGDS-2 (Classification Corner) [redacted] Sep 77
ZBB? What In the World Is That? Jul 77

P.L. 86-36

Authors

(Names in quotation marks are pseudonyms.)

A

[redacted]
Letter to the editor -- [redacted] article Jul 77

ANONYMOUS
A Few Thoughts on the NSA Linguist Mar 77

"APPALLED"
Letter to the editor -- C-LINERS article Mar 77

"ASKEN, Jess"
Which Numbering System Should We Use? Oct 77

B

[redacted]
The Transcription Skill: Concepts and Teaching Methodologies Jul 77

BLANK, Frances
"It's Got to Get Out Today!" Apr 77

BOUCHER, Melvin J.
Letter to the editor -- Mason article "Where Were We? Apr 77
More About More About the NSA SIGINT Summary Jun 77

[redacted]
Contemplating Computing Apr 77

BUCK, Stuart H.
[redacted] Jul 77

BUCKLEY, Dan
Letter to the editor -- [redacted] article Mar 77
Letter to the editor -- [redacted] letter Sep 77

[redacted]
What Ever Does "However" Mean? Nov 77

C

[redacted]
NSA-Crostic No. 7 Apr 77
Early Days in NSA Computing Aug 77
The Doctor Is In(capable of Diagnosing) Sep 77

[redacted] Oct 77

[redacted]
Some Thoughts on the Russian PQE Apr 77

[redacted]
Letter to the editor -- Use of term "compartmented" Jan 77

[redacted]
Knowledge Resource Management at NSA Sep 77

[redacted] Mar 77
What Is Pattern Recognition? Dec 77

[redacted]
What Made Them Do It? (Language Self-Study) Dec 77

[redacted]
An Overview of Project [redacted] Mar 77

[redacted]
Human Factors and System Design -- An Estranged Relationship: Jun 77

[redacted]
GOLDEN OLDIE -- Analyzation of Data Oct 77

D

[redacted]
The Polyhedral War May 77

[redacted]
Letter to the editor -- [redacted] article Jul 77

[redacted]
Another Controversial Book on Artificial Intelligence May 77

E

[redacted]
KI -- SCA Field Management and Evaluation Oct 77

[redacted]
What Is an Information Research Analyst? Aug 77

[redacted]
SIGINT Welcomes INKSTAND Jun 77

F

FILBY, Vera R.
Revised Technical SIGINT Manual in Preparation Mar 77

[redacted]
Letter to the editor -- Salemme article "Expletives Deleted?" Nov 77

[redacted]
More About the NSA SIGINT Summary Mar 77

G

GADDY, David W.
New Directions for the U.S. Intelligence Community Aug 77

[redacted]
Letter to the editor -- "Firebrand" letter Jan 77

[redacted]
CAA Message and News Dec 77

[redacted]
Letter to the editor -- [redacted] article Dec 77

[redacted]
Letter to the editor -- "Medal for Horatius" May 77
A Story with a Moral May 77
Is There a Doctor in the House? Sep 77

GURIN, Jacob
Letter to the editor -- Keyword spotting Mar 77
Which Tape Has the Intelligence: Project [redacted] Jul 77

H

[redacted]
Old Russian Manuscript Ciphers Jun 77

HARRISON, Mary Ann
Why Are These People Smiling? May 77

[redacted]
Letter to the editor -- Salemme article "Expletives Deleted?" Nov 77

I

EO 1.4.(c)
P.L. 86-36

INMAN, B. R., Director, NSA/Chief, CSS:
Director's memorandum: [redacted] Guidance" Nov 77

J

JENKS, Peter
Let Me Repeat -- and Make Myself Perfectly Clear Aug 77

K

[redacted]
Letter to the editor -- Mason article "Vexing Agency-Wide Problem" Jan 77

[redacted]
Speaking of Logging. . . Sep 77

KENNY, MINNIE
Letter to the editor -- [redacted] article Jan 77

[redacted]
Classification Corner Jul 77
XGDS-2 (Classification Corner) Sep 77
Who Said? (Classification Corner) Oct 77

L

[redacted]
Letter to the editor -- Mason article "Where Were We?" Apr 77

[redacted]
Language Processing Forum Nov 77

[redacted]
Objective Satisfaction Score: Collection Performance Nov 77

EO 1.4.(c)
P.L. 86-36

P.L. 86-36

P.L. 86-36

DOCID: 4009805
P.L. 86-36

EO 1.4.(c)
P.L. 86-36

[redacted]
Letter to the editor -- [redacted] article "Ice Age. . ." Jul 77
[redacted]
Letter to the editor -- [redacted] letter Jun 77
"LEINER, Helmut"
Executive Order 11652 Jan 77
[redacted] Nov 77

M

MASON, Frederic O., Jr.
Where Were We? Jan 77
[redacted]
Letter to the editor -- [redacted] article Apr 77
[redacted]
An Overview of Project [redacted] Mar 77
McGRILLIES, James R.
Letter to the editor -- Mason article "Where Were We?" Apr 77
[redacted]
Match Them Up! Jul 77
How Many African Countries Can You Spot? Nov 77
"MOUSE, Ima"
Letter to the editor -- Subscription Aug 77
MURPHY, John D.
Tool Languages Jul 77
[redacted]
What If the Linguists Disappeared? Jan 77

N

[redacted]
A Proposed Cure for the Time-in-Grade Syndrome Nov 77
[redacted]
Letter to the editor -- [redacted] article Apr 77

P

[redacted]
The [redacted] Seminar Program Sep 77
PHILLIPS, Cecil
A View of the Central Computer Complex in the Late 1970s and Early 1980s Mar 77
The Last Word on IATS? Apr 77
Universes, Galazies, Stars, Bars, and Other Concepts May 77
[redacted] Sep 77

R

[redacted]
Letter to the editor -- [redacted] interview Mar 77
"READER, Constant"
Letter to the editor -- [redacted] Oct 77
[redacted]
Another Last Word on IATS Sep 77
[redacted] Dec 77
ROSENBLUM, Howard E.
Partners in the Exciting Future of SIGINT Oct 77

S

SALEMME, A. J.
Flash! 115th SRI Located! Apr 77
Vich Iss R-r-right? Jun 77
Expletives Deleted? Aug 77
SANTIAGO-ORTIZ, Ramon A.
Telling It Like It Is Aug 77
[redacted]
Classification: A Bigger Picture Oct 77
-----, and [redacted]
The Polyhedral War May 77
[redacted]
Plain English May 77
[redacted]
Letter to the editor -- Subscription Jul 77
SNOW, Don
Human Factors in the Use of Microfiche Readers at NSA Oct 77
[redacted]
Letter to the editor -- [redacted] article "Early Days. . . Computing" Nov 77
[redacted]
[redacted] Dec 77
[redacted]
Postscript to "Dating Game" Aug 77
JPRS Language Reference Aids Sep 77
Backing Into Language Acquisition Nov 77
[redacted]
Letter to the editor -- Mason article "Where Were We?" Jun 77
[redacted]
What Ever Happened to the CAA? Jul 77
What Are They Up To, Anyway? (CAA News) Aug 77
Whom? (CAA News) Sep 77
CAA News Oct 77
CAA News Nov 77
A Little TA Problem Nov 77
CAA News Dec 77
[redacted]
Letter to the editor -- [redacted] article Jun 77

T

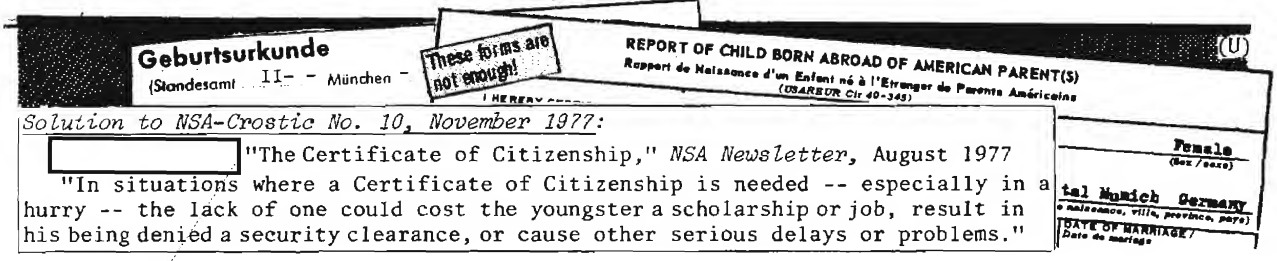
TETRAULT, Emery W.
Letter to the editor -- Buckley letter Apr 77
[redacted]
Choose Ye! May 77
ZBB? What in the World Is That? Jul 77

V

[redacted] Mar 77
Jul 77

W

"WEESON, Derek"
Letter to the editor -- [redacted] article Aug 77
[redacted]
AG-22/IATS: A View from the Bridge Jun 77
[redacted]
The "Ice Age" and International Security Apr 77
Whither the SRA? Sep 77
WIGGLESWORTH, Don
Conversation with a Micrographics Pioneer Dec 77
WILLIAMS, David H.
Dating Game Jul 77
NSA-Crostic No. 9 Sep 77
[redacted]
Language Processing Forum Nov 77

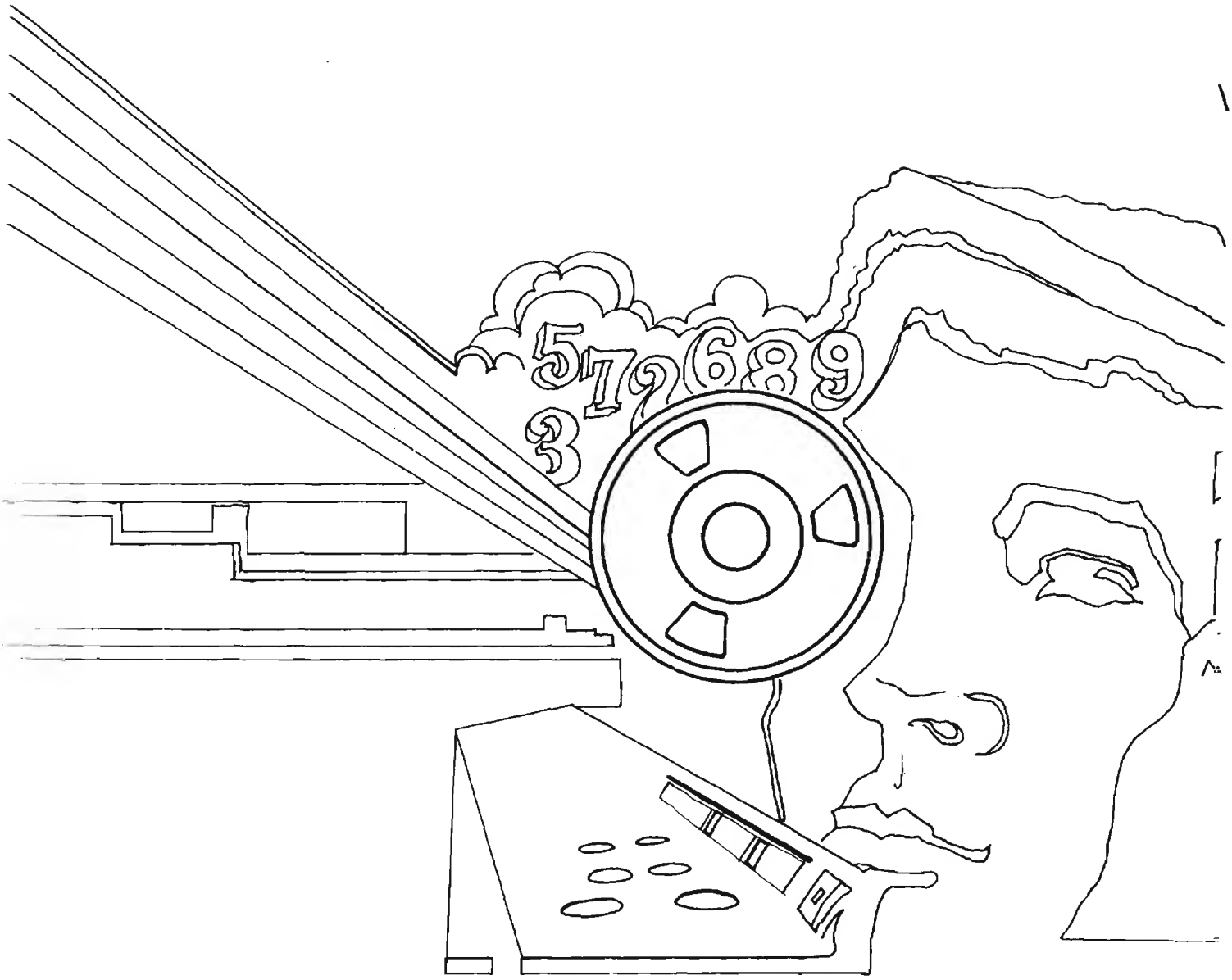


Solution to NSA-Crostic No. 10, November 1977:

[redacted] "The Certificate of Citizenship," *NSA Newsletter*, August 1977

"In situations where a Certificate of Citizenship is needed -- especially in a hurry -- the lack of one could cost the youngster a scholarship or job, result in his being denied a security clearance, or cause other serious delays or problems."

P.L. 86-36


5 7 9 6 8 9
3